APRIL/MAY 2025

23PEPH14B — CRYSTAL GROWTH AND THIN FILMS

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

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1. What is nucleation rate?
2. Define heterogeneous nucleation.
3. What is called Super solubility?
4. Why Constant temperature bath is essential?
5. Differentiate between Gel and Melt growth techniques.
6. Write any three applications of chemical vapour deposition methods.
7. What is spray pyrolysis?
8. Write application of thermal evaporation techniques.

9. How thin films can be grown?

10. What is the use of the substrate.

SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions.

11. (a) Give an account form classical theory of nucleation.

Or

(b) Discus about growth from melts.

12. (a) Derive an expression for super saturation.

Or

(b) Write short notes on Miers TC diagram.

13. (a) Write a short note on Physical vapour deposition.

Or

(b) Give an account for the various types of Gel.

14. (a) Describe RF Magnetron sputtering with create sketch.

Or

(b) Explain pulsed LASER deposition. with neat diagram.

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15. (a) Write short notes on structure of thin film.

Or

(b) Explain atomistic model. in detail.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Briefly explain the different types of nucleation.

17. Write Short notes
    (a) Solubility diagram
    (b) Metastable zone

18. Write Short notes
    (a) Bridgeman method
    (b) Czochralski growth

19. How this firms can be formed by MBE technique.

20. How film thickness can be measured using quat-2 crystal oscillator technique.

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